



NOAA

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE



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FOR IMMEDIATE RELEASE
March 27, 2013

Experimental tornado warnings expanding into 12 additional states in April *NOAA studying whether new, enhanced warning language improves survival*

Last year forecasters with NOAA's National Weather Service in Kansas and Missouri strengthened the messages used in tornado warnings and simplified their format to improve risk communication and public response. The change was an experiment to better understand how social science plays a role in people's understanding of severe weather warnings, and their willingness to seek proper shelter when warranted. The test proved successful and is expanding to 12 additional states in the central U.S. in April.

The project, called "[Impact-Based Warnings](#)," is running within the framework of the National Weather Service's official warning program, with a heightened focus on word choice and message placement within each warning. It allows forecasters to tailor warning messages to individual storms by communicating expected hazards and impacts, as well as actions people should take to remain safe.

"This project was born out of the recognition that language matters, and how we convey risk can mean the difference between life and death during a weather emergency," said John Ogren, acting director of the National Weather Service's Central Region. "This is one of many efforts we've undertaken since the destructive 2011 tornado season to improve our service to America. One important lesson we learned from 2011 is that standard one-size-fits-all tornado warnings contribute to public complacency."

The study of society and social behavior has played an increasingly important role in meteorology in recent years, as forecasters seek to learn how they can best help citizens and emergency officials assess their vulnerability. Emergency managers responded positively to the test in Kansas and Missouri last year, reporting that the enhanced warnings gave them more insight into what a forecaster is thinking as opposed to the less-flexible standard warnings.

"All tornado warnings indicate a serious situation, but we realize that the strongest storms and those that stay on the ground longer pose a greater risk to life," Ogren added. "These enhanced warnings allow us to ring the bell a little louder in those situations."

The project gives forecasters three-tiered tornado warning options:

- When a tornado is possible based on radar data, the warning will include a bulleted list that clearly communicates hazards and impacts. This is the most common type of warning.
- When there is substantial evidence of a large and dangerous tornado, the warning will include the phrase, "This is a particularly dangerous situation," to identify a high threat level, describe expected damage and promote urgency to seek immediate shelter. A damage threat tag of "considerable" will be embedded in the warning.
- When a known, potentially violent tornado is likely to produce devastating damage, the warning will announce a "Tornado Emergency" and direct the public to seek shelter

immediately. A damage threat tag of “catastrophic” will be embedded in the warning. This is the highest level of tornado warning and will be reserved for rare cases like the deadly EF-5 that struck Joplin in 2011.

The Joplin tornado, which killed more than 160 people on May 22, 2011, inspired the development of this project after a National Weather Service assessment team found that many victims spent precious time verifying the twister, making it too late to seek shelter. The team also found that some people living in tornado-prone areas may be desensitized to warnings.

States in the Impact Based Warnings project area include Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin and Wyoming. The project covers a large section of the most tornado-prone part of the country.

This project is part of NOAA’s effort to build a [Weather-Ready Nation](#), by ensuring that National Weather Service forecasts effectively convey threats and elicit public response to maximize safety.

NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources. Working with partners, NOAA’s National Weather Service is building a Weather-Ready Nation to support community resilience in the face of increasing vulnerability to extreme weather. Visit us online at weather.gov and on [Facebook](#), [Twitter](#) and our other [social media channels](#).